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PERKINS COIE LLP
PATENT-SEA
P.O. BOX 1247
SEATTLE, WA 98111-1247

EXAMINER	
JONES, HEATHER RAE	

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2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/726,334	VON FLOTOW ET AL.	
	Examiner	Art Unit	
	HEATHER R. JONES	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _14 April 2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-3,6-19 and 27-43_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-3,6-19 and 27-41_ is/are rejected.

7)☒ Claim(s) _42 and 43_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _01 December 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _4/14/2009_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed April 14, 2009, with respect to the rejection(s) of claim(s) 1-3, 6-19, and 27-43 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a newly found prior art reference.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 7-19, and 27-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riconda et al. (U.S. Patent Application Publication 2002/0130953) in view of Basson et al. (U.S. Patent 7,474,335).

Regarding claim **1**, Riconda et al. discloses a method for stabilizing an image of an object being taken from a video camera, the video camera being moved by a transport mechanism and being controlled by a line-of-sight controller, the method controlling: receiving a plurality of images of the object (paragraphs [0132]-[0133] – multiple images are taken in order to track the object); and for each of the plurality of images (paragraph [0132] – parameters are received before each frame is taken), determining a difference between the

location of the object within the image and the location of the object within a previously captured image (Figs. 18A and 18B; paragraphs [0130]-[0136]); receiving a distance from the camera to the object (paragraph [0131] - the distance of the item (object) determined by the focus control on the camera lens); calculating an inter-frame stabilization adjustment based on the distance to the object and the difference between the location of the object within the image and the location of the object within a previously captured image (Figs. 18A and 18B; paragraphs [0130]-[0136] - the positional difference of the object is determined and this information is used to change the camera mounting); adjusting the position of a displayed area of the image, wherein the received image is larger than the displayed image and the adjusting of the display of the image moves an area of the displayed image within the received image (paragraph [0023] – parts of the image can be emphasized or enhanced - it is well known in the art that when the user zooms in on the target the image would need to be adjusted accordingly to display); calculating a line-of-sight adjustment for the line-of-sight controller based on the inter-frame stabilization adjustment (Figs. 18A and 18B; paragraphs [0130]-[0136]); and controlling the line-of-sight controller in accordance with the calculated line-of-sight adjustment (Figs. 18A and 18B; paragraphs [0130]-[0136]). However, Riconda et al. fails to disclose using the inter-frame stabilization adjustment for adjusting the position of a displayed area of an image, and adjusting the position of a displayed area of the image based on the inter-frame stabilization adjustment.

Referring to the Basson et al. reference, Basson et al. discloses a method for stabilizing an image of an object being taken from a video camera, the video camera being moved by a transport mechanism (col. 1, lines 66 – col. 2, line 3), the method comprising: using the inter-frame stabilization adjustment for adjusting the position of a displayed area of an image, and adjusting the position of a displayed area of the image based on the inter-frame stabilization adjustment (col. 3, line 40 – col. 4, line 25 and col. 4, lines 41-55 – the image displayed is the image that "should" be displayed as in the image that is displayed accommodates for the movement of the object and movement of the camera).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have adjusted the display according to the inter-frame stabilization adjustment as calculated by Basson et al. in the method disclosed by Riconda et al. in order to allow the user to easily view the image on the transport mechanism. However, Riconda et al. in view of Basson et al. fail to disclose adjusting the position of a displayed area of an image according to an inter-frame stabilization calculation that considers all the parameters considered in adjusting the line-of-sight controller. Official Notice is taken that it is well known in the art that to further adjust an image to achieve a higher quality of image one should take into consideration all parameters that may affect the image quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further included all the

parameters used in calculating the line-of-sight controller in the calculation to adjust the position of a displayed area of an image in method disclosed by Riconda et al. in view of Basson et al. in order to achieve a higher quality image.

Regarding claim **2**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1 including that the transport mechanism is an airborne vehicle (Basson et al.: col. 2, lines 14-19).

Regarding claim **3**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1 including that the line of sight of the camera is derived from the line-of-sight controller (Riconda et al.: Figs. 18A and 18B; paragraphs [0130]-[0136]).

Regarding claim **7**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1 including that the controlling of the line-of-sight controller specifies rate of scan and tilt movement (Riconda et al.: paragraph [0136] – angular movements include scan and tilt movements).

Regarding claim **8**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1 including that the distance to the object is provided by a range finder (Riconda et al.: paragraph [0131] - range finder).

Regarding claim **9**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1 including that the distance to the object is calculated based on the line of sight of the camera and

the difference in altitude of the object to the camera (Riconda et al.: paragraph [0131] – distance finder/range finder - the distance from the camera to the subject being photographed is used and if the camera is in an airplane then altitude would be a factor in finding the distance).

Regarding claim **10**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1 including that the velocity of the transport mechanism is relative to the object (Riconda et al.: paragraph [0131] – change in position of the vehicle, or vehicle motion (e.g., as determined by speed and wheel direction, or by use of inertial sensors) and the position of the object is relative to the vehicle).

Regarding claim **11**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1 including that the velocity of the transport mechanism is relative to an earth frame of reference (Riconda et al.: paragraph [0131] – the position of the object, which can be an earth frame of reference, is relative to the vehicle).

Regarding claim **12**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1 including that the calculated inter-frame stabilization adjustment factors in field of view of the display (Basson et al.: col. 1, lines 9-12 – the user's field of view is considered). Furthermore, the more factors that are considered in the calculation for the inter-frame stabilization adjustment the higher the image quality will be.

Regarding claim **13**, Riconda et al. discloses a method for stabilizing an image of an object being taken from a video camera, the video camera being moved by a transport mechanism and being controlled by a line-of-sight controller, the image being displayed on a display device, the method comprising: determining a difference in the location of the object within the image from one frame to the next frame (Figs. 18A and 18B; paragraphs [0130]-[0136]); calculating an inter-frame stabilization adjustment based on the determined difference (Figs. 18A and 18B; paragraphs [0130]-[0136]); calculating a line-of-sight adjustment for the line-of-sight controller based on the inter-frame stabilization adjustment (Figs. 18A and 18B; paragraphs [0130]-[0136]); calculating a line-of-sight adjustment for the line of sight controller based on the inter-frame stabilization adjustment to account for large-amplitude jitter (Figs. 18A and 18B; paragraphs [0130]-[0136]); and controlling the line-of-sight controller in accordance with the calculated line-of-sight adjustment (Figs. 18A and 18B; paragraphs [0130]-[0136]). However, Riconda et al. fails to disclose adjusting the display of the image based on the inter-frame stabilization adjustment to remove small-amplitude jitter.

Referring to the Basson et al. reference, Basson et al. discloses a method for stabilizing an image of an object being taken from a video camera, the video camera being moved by a transport mechanism (col. 1, lines 66 – col. 2, line 3), the method comprising: using the inter-frame stabilization adjustment for adjusting the position of a displayed area of an image, and adjusting the position

of a displayed area of the image based on the inter-frame stabilization adjustment, thereby adjusting the display of the image based on the inter-frame stabilization adjustment to remove small-amplitude jitter (col. 3, line 40 – col. 4, line 25 and col. 4, lines 41-55 – the image displayed is the image that "should" be displayed as in the image that is displayed accommodates for the movement of the object and movement of the camera).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have adjusted the display according to the inter-frame stabilization adjustment as calculated by Basson et al. in the method disclosed by Riconda et al. in order to allow the user to easily view the image on the transport mechanism.

Regarding claim **14**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 13 including that the determining of the difference includes analyzing scan and tilt rate of the line-of-sight controller (Riconda et al.: paragraph [0131] - the positions of the angular transducers effecting the attitudinal control of the robotic camera mounting, which would include the scan and tilt rates that create the angular position of the camera).

Regarding claim **15**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 13 including that the determining of the difference includes analyzing velocity of the transport mechanism (Riconda et al.: paragraph [0131] - change in position of the vehicle,

or vehicle motion (e.g., as determined by speed and wheel direction, or by use of inertial sensors)).

Regarding claim **16**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 13 including that the determining of the difference includes analyzing line of sight of the camera (Riconda et al.: paragraph [0131] - the positions of the angular transducers effecting the attitudinal control of the robotic camera mounting, which would include the line of sight of the camera).

Regarding claim **17**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 13 including that the determining of the difference includes analyzing orientation of the camera and the transport mechanism (Riconda et al.: paragraph [0131], [0133], and [0134]).

Regarding claim **18**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 13 including that the determining of the difference includes recognizing the object within the images (Riconda et al.: Figs. 18A and 18B; paragraphs [0130]-[0136]).

Regarding claim **19**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 13 including that the calculated line-of-sight adjustment specifies a scan and tilt rate for the line-of-sight controller (Riconda et al.: Figs. 18A and 18B; paragraphs [0130]-[0136]).

Regarding claim **27**, Riconda et al. discloses an apparatus for stabilizing imagery from a moving video camera displayed on a display device, comprising: a mechanical line-of-sight controller for controlling line of sight of the video camera at a specified line-of-sight adjustment rate (Figs. 2A, 2B, 18A and 18B; paragraphs [0130]-[0136]); and an electronic stabilization component that provides frame-to-frame image stabilization based on a location of an object within the images and that provides to the mechanical line-of-sight controller a new line-of-sight adjustment rate derived from the change in location of an object within the images to account of large-amplitude jitter (Figs. 18A and 18B; paragraphs [0130]-[0136]). However, Riconda et al. fails to disclose adjusting the display of the image based on the inter-frame stabilization adjustment to remove small-amplitude jitter.

Referring to the Basson et al. reference, Basson et al. discloses a method for stabilizing an image of an object being taken from a video camera, the video camera being moved by a transport mechanism (col. 1, lines 66 – col. 2, line 3), the method comprising: using the inter-frame stabilization adjustment for adjusting the position of a displayed area of an image, and adjusting the position of a displayed area of the image based on the inter-frame stabilization adjustment, thereby adjusting the display of the image based on the inter-frame stabilization adjustment to remove small-amplitude jitter (col. 3, line 40 – col. 4, line 25 and col. 4, lines 41-55 – the image displayed is the image that "should" be

displayed as in the image that is displayed accommodates for the movement of the object and movement of the camera).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have adjusted the display according to the inter-frame stabilization adjustment as calculated by Basson et al. in the method disclosed by Riconda et al. in order to allow the user to easily view the image on the transport mechanism.

Regarding claim **28**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 20 including that the amount of frame-to- frame image stabilization is additionally based on velocity and orientation of an airborne transport vehicle, orientation of the camera relative to the airborne transport vehicle, and distance from the camera to an object within the image (Riconda et al.: paragraph [0131]; Basson et al.: col. 3, line 40 – col. 4, line 25 and col. 4, lines 41-55).

Regarding claim **29**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 27 including that an amount of frame-to-frame image stabilization is additional based on the specified line-of-sight adjustment rate (Riconda et al: Figs. 18A and 18B; paragraphs [0130]-[0136]).

Regarding claim **30**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 20 including that the

line-of-sight adjustment rate includes a scan rate and a tilt rate (Riconda et al.: paragraph [0131] - the positions of the angular transducers effecting the attitudinal control of the robotic camera mounting, which would include the scan and tilt rates that create the angular position of the camera).

Regarding claim **31**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 20 including that an image received from the video camera is larger than a displayed image and the electronic stabilization component provides frame-to-frame image stabilization by adjusting the location of the displayed image within a received image (Riconda et al.: paragraph [0023] – it is well known in the art that when the user zooms in on the target the image would need to be adjusted accordingly to display).

Regarding claim **32**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 20 including that the specified line-of-sight adjustment rate includes a user-specified image flow (Riconda et al.: Figs. 18A and 18B; paragraphs [0130]-[0136] – the user can determine the area of interest, which object to track).

Regarding claim **33**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 20 including that the mechanical line-of-sight controller is a motorized gimbal system (Riconda et al.: Figs. 2A and 2B).

Regarding claim **34**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 20 including that the

frame-to-frame adjustment keeps an object of the images at the same location when displayed (Riconda et al.: Figs. 18A and 18B; paragraphs [0130]-[0136] – camera is updated with new parameters in order to keep the target in the center of the display).

Regarding claim **35**, Riconda et al. discloses a method for stabilizing images being taken from a video camera mounted on a moving vehicle, the camera having a line of sight being controlled by a line-of-sight controller, the method comprising: calculating initial coordinates for a viewport, the viewport corresponding to a portion of an image that is to be displayed (paragraph [0023] – in order to display the zoomed portion of the image the viewport needs to be calculated); calculating inter-frame stabilization adjustments based on the change in location of an object in a succession of image frames to account for velocity of the vehicle (Figs. 18A and 18B; paragraphs [0130]-[0136]); calculating line-of-sight adjustments for the line-of-sight controller based on the inter-frame stabilization adjustments (Figs. 18A and 18B; paragraphs [0130]-[0136]); and controlling the line-of-sight controller in accordance with the calculated line-of-sight adjustments (Figs. 18A and 18B; paragraphs [0130]-[0136]). However, Riconda et al. fails to disclose the inter-frame stabilization adjustments used to electronically move the viewport from one frame to the next frame; moving the viewport in accordance with the calculated inter-frame stabilization adjustments; and displaying a portion of an image corresponding to the moved viewport.

Referring to the Basson et al. reference, Basson et al. discloses a method for stabilizing an image of an object being taken from a video camera, the video camera being moved by a transport mechanism (col. 1, lines 66 – col. 2, line 3), the method comprising: using the inter-frame stabilization adjustment for adjusting the position of a displayed area of an image, and adjusting the position of a displayed area of the image based on the inter-frame stabilization adjustment (col. 3, line 40 – col. 4, line 25 and col. 4, lines 41-55 – the image displayed is the image that "should" be displayed as in the image that is displayed accommodates for the movement of the object and movement of the camera).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have adjusted the display according to the inter-frame stabilization adjustment as calculated by Basson et al. in the method disclosed by Riconda et al. in order to allow the user to easily view the image on the transport mechanism. However, Riconda et al. in view of Basson et al. fail to disclose adjusting the position of a displayed area of an image according to an inter-frame stabilization calculation that considers all the parameters considered in adjusting the line-of-sight controller. Official Notice is taken that it is well known in the art that to further adjust an image to achieve a higher quality of image one should take into consideration all parameters that may affect the image quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further included all the

parameters used in calculating the line-of-sight controller in the calculation to adjust the position of a displayed area of an image in method disclosed by Riconda et al. in view of Basson et al. in order to achieve a higher quality image.

Regarding claim **36**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 35 including that the calculating of the inter-frame stabilization adjustments factors in scan and tilt rate of the line-of-sight controller (Riconda et al.: paragraph [0131] - the positions of the angular transducers effecting the attitudinal control of the robotic camera mounting, which would include the scan and tilt rates that create the angular position of the camera).

Regarding claim **37**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 35 including that the calculating of the inter- frame stabilization adjustments factors in line of sight of the camera (Riconda et al.: paragraph [0131] - the positions of the angular transducers effecting the attitudinal control of the robotic camera mounting, which would include the line of sight of the camera).

Regarding claim **38**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 35 including that the calculating of the inter- frame stabilization adjustments factors in orientation of the camera and the vehicle (Riconda et al.: paragraph [0131], [0133], and [0134]).

Regarding claim **39**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 35 including that the calculating of the inter- frame stabilization adjustments includes recognizing an object within the images (Riconda et al.: Figs. 18A and 18B; paragraphs [0130]-[0136]).

Regarding claim **40**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 35 including that the calculated line-of-sight adjustment specifies a scan and tilt rate for the line-of-sight controller (Riconda et al.: Figs. 18A and 18B; paragraphs [0130]-[0136]).

Regarding claim **41**, Riconda et al. discloses a method in a camera stabilization system for stabilizing the display of images received from a video camera attached to an aircraft and controlled by a gimbal-based line-of-sight controller (Figs. 2A and 2B), the method comprising: receiving a first image from the video camera; receiving a second image from the video camera; determining the position of an object in the first image; determining the position of the object in the second image; determining an image pixel offset in the scan direction, IPO(S), based on the difference in the position of the object in the first and second images; determining an image pixel offset in the tilt direction, IPO(T), based on the difference in the position of the object in the first and second images; determining a pixel offset in the scan direction, PO(S), based on IPO(S); determining a pixel offset in the tilt direction, PO(T), based on IPO(T); converting PO(S) to a corresponding scan angle based on the field of view of the camera;

converting PO(T) to a corresponding tilt angle based on the field of view of the camera; and adjusting the velocity of the line-of-sight controller based on the scan angle and the tilt angle so that both the display of the image and the line of sight controller are adjusted based on IPO(S) and IPO(T) (Figs. 18A and 18B; paragraphs [0130]-[0136] – in order to determine the difference between two images the object would be compared to the previous image in both the scan and tilt directions and since pictures are being compared one way to measure them are according to pixels which would be finest detail to better accurately determine the distance). However, Riconda et al. fails to disclose adjusting the display of an image on a display device of the camera stabilization system based on PO(S) and PO(T) so that both the display of the image and the line of sight controller are adjusted to based on the IPO(S) and IPO(T).

Referring to the Basson et al. reference, Basson et al. discloses a method for stabilizing an image of an object being taken from a video camera, the video camera being moved by a transport mechanism (col. 1, lines 66 – col. 2, line 3), the method comprising: using the inter-frame stabilization adjustment for adjusting the position of a displayed area of an image, and adjusting the position of a displayed area of the image based on the inter-frame stabilization adjustment, thereby adjusting the display of an image on a display device of the camera stabilization system based on scan and tilt directions (col. 3, line 40 – col. 4, line 25 and col. 4, lines 41-55 – the image displayed is the image that

"should" be displayed as in the image that is displayed accommodates for the movement of the object and movement of the camera).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have adjusted the display according to the inter-frame stabilization adjustment as calculated by Basson et al. in the method disclosed by Riconda et al. in order to allow the user to easily view the image on the transport mechanism.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riconda et al. in view of Basson et al. as applied to claim 1 above, and further in view of Claus et al. (U.S. Patent 7,133,067).

Regarding claim **6**, Riconda et al. in view of Basson et al. discloses all the limitations as previously discussed with respect to claim 1, but fails to disclose that the inter-frame stabilization adjustment specifies the number of pixels in scan and tilt directions.

Referring to the Claus et al. reference, Claus et al. discloses a method for stabilizing an image of an object being taken from a video camera, the video camera being moved by a transport mechanism, wherein the method comprises the inter-frame stabilization adjustment specifies the number of pixels in scan and tilt directions (Claus et al.: col. 2, lines 35-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have specified the inter-frame stabilization adjustment according to pixels as disclosed by Claus et al. in the method

disclosed by Riconda et al. in view of Basson et al. in order to precisely specify the changes in the display as well as the camera movements.

Allowable Subject Matter

5. Claims 42 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: Prior art fails to teach or fairly suggest a method in a camera stabilization system for stabilizing the display of images received from a video camera attached to an aircraft and controlled by a gimbal-based line-of-sight controller, the method further comprising:

a. determining aircraft pixel offsets caused by the movement of the aircraft by, receiving an indication of the velocity of the aircraft in the earth reference frame, $V^E_{aircraft}$, receiving a matrix, C_{BE}, corresponding to the orientation of the aircraft in the earth reference frame, receiving a matrix, C_{CB}, corresponding to the orientation of the camera, calculating a transformation matrix, C_{CE}, for transforming form the earth reference frame to the camera reference frame, wherein $C_{CE}=C_{CB}C_{BE}$, calculating a line of sight, L^E, of the camera in the earth reference frame, wherein $L^E = C_{CE}^T(1,0,0)^T$, determining the distance, K, to an object at the center of the image, determining the velocity of the aircraft in the camera reference frame, $V^c_{aircraft}$, wherein $V^c_{aircraft} = C_{CE} * V^E_{aircraft}$, calculating a

normalized velocity of the aircraft $V^{c}_{aircraft} = V^{c}_{aircraft} /K$, calculating a first difference in scan units ΔS_1^C, wherein $\Delta S_1^C = V^{c}_{aircraft}(S) * \Delta T$, wherein $V^{c}_{aircraft}(S)$ corresponds to the normalized velocity of the aircraft in the scan direction, and wherein ΔT corresponds to a frame refresh period, calculating a first difference in tilt units ΔT_1^C, wherein $\Delta T_1^C = V^{c}_{aircraft}(T) * \Delta T$, wherein $V^{c}_{aircraft}(T)$ corresponds to the normalized velocity of the aircraft in the tilt direction, calculating an aircraft pixel offset in the scan direction APO(S), wherein APO(S)= ΔS_1^C * P/Z, wherein P corresponds to a pixel density associated with the camera, and wherein Z corresponds to a zoom factor associated with the camera, calculating an aircraft pixel offset in the tilt direction APO(T), wherein APO(T)= ΔT_1^C * P/Z, wherein PO(S) is determined based on IPO(S) and APO(S), and wherein PO(T) is determined based on IPO(T) and APO(T) (claim 42, claim 43 depends from claim 42).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEATHER R. JONES whose telephone number is (571)272-7368. The examiner can normally be reached on Mon. - Thurs.: 7:00 am - 4:30 pm, and every other Fri.: 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thai Tran can be reached on 571-272-7382. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Heather R Jones
Examiner
Art Unit 2621

HRJ
July 16, 2009

/HUY T NGUYEN/
Primary Examiner, Art Unit 2621